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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 826,098	04 05 2001	Lakeshi Yamashita	740819-537	2729

22204 7590 05 28 2003

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EXAMINER

CHEN, KIN CHAN

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 05 28 2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/826,098

Applicant(s)

YAMASHITA ET AL.

Examiner

Kin-Chan Chen

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 5-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jain et al. (US 6,180,533 B1; hereinafter "Jain") in view of Koshimizu et al. (US 6,426,477; hereinafter "Koshimizu").

In a method for etching a trench in a silicon substrate, Jain uses a dry etching apparatus having a dual power source capable of independently controlling source power for generating a plasma in a chamber and bias power for drawing ions from the plasma into an object to be etched in the chamber. A substrate having a member containing at least silicon exposed is placed in the chamber. A process gas containing at least oxygen is introduced into the chamber in which the substrate has been placed. The bias power is initiated. The etching with respect to the member is performed by generating a plasma of the process gas with application of the source power and drawing ions from the plasma into the member with application of the bias power (col. 7, lines 8-12, 45-50; col. 19 and Table eight).

Unlike the claimed invention, Jain does not teach initiating the application of the bias power before initiating the application of the source power. In a method of plasma processing, Koshimizu teaches that the bias power may be supplied in advance of starting the source power in order to eliminating damage in the plasma process of a substrate (abstract; col. 1, lines 6-10). Hence, it would have been obvious to one with ordinary skilled in the art to initiate the application of the bias power before initiating the application of the source power in order to eliminating damage in the plasma process of a substrate.

The instant claims differ from Jain and Koshimizu by specifying initiating the bias power before oxidization proceeds at a surface of the member. However, it is well known that during silicon etching the oxidization would take place on the surface of the substrate, it would have been obvious to one with ordinary skilled in the art to prevent the defect of oxidization by initiating the bias power before any defect occurs because Koshimizu teaches that initiating the bias power to eliminate damage in the plasma process of a substrate. Furthermore, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious.

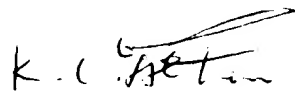
As to dependent claim 3, because the combined prior discloses that the source power and bias power are separately controlled in the process, therefore, the source power and bias power are operated and adjusted separately. Hence, it would have been obvious to one with ordinary skill in the art that an effective value of the source power reaches a predetermined value after an effective value of the bias power reaches

Art Unit: 1765

another value. As to dependent claims 4 and 20, Jain teaches the silicon substrate (col. 7, lines 8-10).

With respect to dependent claim 19, as has been stated in the office action, it is well known that during silicon etching the oxidization would take place on the surface of the substrate, it would have been obvious to one with ordinary skilled in the art to adjust the process parameters in order to control the etching selectivity and etching rates between oxide and silicon.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (703) 305-0222. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on (703) 308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-2934.



K-C C  
May 23, 2003